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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/743,493	12/23/2003	Se-Wan Kim	0630-1891P	7784
2292 -7590 01/26/2007 BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747			EXAMINER WEISKOPF, MARIE	
			ART UNIT	PAPER NUMBER
			3661	

SHORTENED STATUTORY PERIOD OF RESPONSE	NOTIFICATION DATE	DELIVERY MODE
3 MONTHS	01/26/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Notice of this Office communication was sent electronically on the above-indicated "Notification Date" and has a shortened statutory period for reply of 3 MONTHS from 01/26/2007.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

Office Action Summary	Application No. 10/743,493	Applicant(s) KIM ET AL.	
	Examiner Marie A. Weiskopf	Art Unit 3661	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 12-16 and 22-26 is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-10 and 17-20 is/are rejected.
- 7) ☒ Claim(s) 5, 11 and 21 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-11 and 17-21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

- Claims 1, 6 and 17 all state receiving an infrared signal and an ultrasonic signal and then further continue to state detecting a position of a mobile robot on the basis of the calculated time difference and a distance value previously stored between ultrasonic wave generators generating the ultrasonic signals. It is unclear whether the claims are directed towards a single ultrasonic signal or multiple. Examiner assumes for the basis of the rejection the claim is directed to an ultrasonic signal.
- Claims 2-5, 7-11 and 18-21 are rejected because they depend from rejected claims 1, 6 and 17 respectively.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-4, 6-10, and 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nelson (US 5,191,328).

- In regard to claims 1 and 17, Nelson discloses a method for detecting a position of a trailer, comprising:
 - Receiving an infrared signal and an ultrasonic signal and calculating a time difference between the received infrared signal and the ultrasonic signal (Column 4, lines 51-56)
 - Detecting a position of a trailer on the basis of the calculated time difference and a distance value previously stored between ultrasonic wave generators generating the ultrasonic signals. (Column 6, lines 17-67)Nelson doesn't specifically disclose multiple ultrasonic wave generators but does disclose multiple ultrasonic wave receivers. It would have been obvious to one having ordinary skill in the art at the time of the invention to use either multiple generators or multiple receivers to be able to determine a position of a trailer or a mobile robot.
- In regard to claims 2 and 18, wherein in the step of calculating the time difference, respective times at which the ultrasonic signals have been received are measured on the basis of the time at which the infrared signal has been received. (Column 4, lines 57-64)
- In regard to claims 3 and 19, wherein the step of detecting a position of an object comprises:

- Calculating a distance between the ultrasonic wave generators and the mobile robot by multiplying a sound velocity to the calculated time difference value (Column 5). As discussed previously, Nelson doesn't specifically disclose calculating a distance between ultrasonic wave generators but does calculate the distance between the ultrasonic receivers. It would have been obvious to one having ordinary skill in the art at the time of the invention to use either multiple generators or multiple receivers to be able to determine a position of a trailer or a mobile robot.
 - Detecting the distance and angle between the ultrasonic wave generators and the mobile robot on the basis of the calculated distance and the distance value previously stored between the ultrasonic wave generators (Column 5)
- In regard to claims 4 and 20, wherein in the step of detecting a position of an object, the distance and angle of the object are detected through a triangulation on the basis of the calculated distance value and the distance value previously stored between the ultrasonic wave receivers. (Column 5)
- In regard to claim 6, a method for detecting a position of an object, comprising:
 - Transmitting an infrared signal generated from a fixed infrared generator and an ultrasonic signal generated from a fixed ultrasonic wave generator to an object. (Column 4, lines 51-56)
 - Calculating a time difference between the transmitted infrared signal and the ultrasonic signal (Column 4, lines 57-64)

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- Calculating each distance between the object and the ultrasonic wave generators on the basis of the calculated time difference value (Column 4, lines 57-64)
 - Detecting a position of the object on the basis of the calculated distance value and a distance value previously set between the ultrasonic wave receivers. (Column 6, lines 17-67) Nelson doesn't specifically disclose multiple ultrasonic wave generators but does disclose multiple ultrasonic wave receivers. It would have been obvious to one having ordinary skill in the art at the time of the invention to use either multiple generators or multiple receivers to be able to determine a position of a trailer or a mobile robot.
- In regard to claim 7, wherein in the step of calculating the time difference, respective times at which the ultrasonic signals have been received are measured on the basis of the time at which the infrared signal has been received. (Column 4, lines 57-64)
- In regard to claim 8, wherein the distance between the ultrasonic wave generators and the mobile robot by multiplying a sound velocity to the calculated time difference value (Column 5). As discussed previously, Nelson doesn't specifically disclose calculating a distance between ultrasonic wave generators but does calculate the distance between the ultrasonic receivers. It would have been obvious to one having ordinary skill in the art at the time of the invention to

use either multiple generators or multiple receivers to be able to determine a position of a trailer or a mobile robot.

- In regard to claim 9, detecting the distance and angle between the ultrasonic wave generators and the mobile robot on the basis of the calculated distance and the distance value previously stored between the ultrasonic wave generators (Column 5)
- In regard to claim 10, wherein in the step of detecting a position of an object, the distance and angle of the object are detected through a triangulation on the basis of the calculated distance value and the distance value previously stored between the ultrasonic wave receivers. (Column 5)

Allowable Subject Matter

5. Claims 12-16 and 22-26 are allowed.
6. The following is a statement of reasons for the indication of allowable subject matter: the prior art, individually or in combination, fails to disclose, teach or suggest receiving an infrared signal and a first ultrasonic signal simultaneously generated from an infrared generator and a first ultrasonic wave generator, respectively, installed at the charging device, calculating a distance between the mobile robot and the first ultrasonic wave generator on the basis of the infrared signal and the first ultrasonic signal, receiving a second ultrasonic wave generator installed at the charging device and calculating a distance between the mobile robot and the second ultrasonic wave generator on the basis of the second ultrasonic signal. The closest prior art, Nelson, discloses only having two receivers for a single ultrasonic wave sent instead of two

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ultrasonic wave generators and does not mention or disclose sending ultrasonic wave signals at different times.

7. Claims 5, 11 and 21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

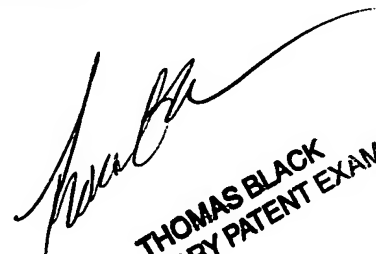
8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US 6,769,709 to Piper et al discloses a trailer hitch alignment system and method.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marie A. Weiskopf whose telephone number is (571) 272-6288. The examiner can normally be reached on Monday-Thursday between 7:00 AM and 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Black can be reached on (571) 272-6956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MW



THOMAS BLACK
SUPERVISORY PATENT EXAMINER